



FIREMAN'S FUND INSURANCE COMPANY

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

1. INSURED INFORMATION		2. AGENT/AGENCY INFORMATION	
BRUHN FARMS JOINT VENTURE 14535 WALNUT AVE MADLETON IA 51034 (712) 882-2735 TAX ID: XX-XXX9925	LOSS PAYABLE:	14-1252 01 TERRY NIELSEN AGENCY 205 MAIN PO BOX 87 IDA GROVE IA 51445-0087 (712) 364-2431	

LINE	COUNTY	LOCATIONID	11 ADDITIONAL LOCATIONS	SECTIONID	TWP-RNG	CROP	SHARE	TENURE	
								SIZE	DESIGNATION
1.00	133-MONONA			025,026	084N-043W	RYE	1.000	1	
1.10	133-MONONA	EFFECTIVE: 05-10	12:01 AM	035,036	084N-043W	RYE	1.000	1	
2.00	133-MONONA	EFFECTIVE: 05-24	12:01 AM	025,026	084N-043W	CORN	1.000	1	
3.00	133-MONONA	EFFECTIVE: 05-28	12:01 AM	016	085N-042W	CORN	1.000	1	
4.00	133-MONONA	EFFECTIVE: 05-28	12:01 AM	010	085N-043W	CORN	1.000	1	
5.00	133-MONONA	EFFECTIVE: 05-28	12:01 AM	010	085N-043W	CORN	1.000	1	
6.00	133-MONONA	EFFECTIVE: 05-28	12:01 AM	001	084N-043W	CORN	1.000	1	
7.00	133-MONONA	EFFECTIVE: 05-23	12:01 AM	021	085N-042W	CORN	1.000	1	

DISCLAIMER STATEMENT: If a revised Schedule of Insurance (SOI) is not furnished to us within 10 days of planting/seeding being complete for the crops listed on the binder, coverage will be determined by the SOI in effect at the time of the original application.

Will continue and premium will be charged based upon the original insurance amount. The provisions contained in the Crop Hall policy will determine the procedure that will be followed.

P R O V I D E R S O N S		HA - 090A HA - 2052A	05/10/12 05/10/12	HA - 2046 RCTS GP31AMN	05/10/12 05/10/12	P A Y M E N T
THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:						T O T A L S
RCIS P.O. Box 38 Anoka, MN 55303-0038						GROSS PREMIUM: <input type="checkbox"/> PMP DISCOUNT: NET PREMIUM: Case

Policy Issuance documents are available for online viewing at RCIS.com. Go to RCIS.com, select 'Retrieve Crop Provisions', enter this policy number, state, and crop year to view the Crop Insurance provisions for your insured crops. If you are enrolled in RCIS.com for Producers, your information is available from your Document Library. If you would prefer to receive a paper copy, please contact your agent.

BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0002



FIREMAN'S FUND INSURANCE COMPANY
Managing General Agents for:

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

1. INSURED INFORMATION		2. AGENT/AGENCY INFORMATION		3. COUNTY		4. CROP		5. ACRES		6. LIABILITY		7. PREMIUM	
BRUHN FARMS JOINT VENTURE 14535 WALNUT AVE MAPLETON IA 51034 (712) 882-2735 TAX ID: XX-XXX925 LOSS PAYABLE:		14-1252 01 TERRY NIELSEN 205 MAIN PO BOX 87 IDA GROVE IA 51445-0087 (712) 364-2431										FFIC 0003	

9. LINE	10. COUNTRY	11. ADDITIONAL LOCATION ID	12. LEGAL SECTION(S)	13. TWP-RNG	14. CROP	15. POLICY SHARE	16. FORM OPTIONS	17. PREV LOSS%	18. ACRES	19. PA	20. LIABILITY	21. RATE	22. PREMIUM	
8. 00	133-MONONA			002	085N-043W	CORN	1.000	BASIC		150.00	\$500	\$75,000	2.30	\$1,720
9. 00	133-MONONA			009	085N-043W	CORN	1.000	BASIC		120.00	\$500	\$60,000	2.30	\$1,380
10. 00	133-MONONA			016	085N-043W	CORN	1.000	BASIC		155.00	\$500	\$77,500	2.30	\$1,783
11. 00	133-MONONA			023	084N-043W	CORN	1.000	BASIC		655.00	\$500	\$327,500	2.30	\$7,533
				036										
12. 00	133-MONONA			023	085N-042W	CORN	1.000	BASIC		20.00	\$500	\$10,000	2.30	\$230
13. 00	133-MONONA			023	085N-042W	CORN	1.000	BASIC		130.00	\$500	\$65,000	2.30	\$1,495
14. 00	133-MONONA			023, 026	085N-043W	CORN	1.000	BASIC		315.00	\$500	\$157,500	2.30	\$3,621
15. 00	133-MONONA			003	085N-043W	CORN	1.000	BASIC		155.00	\$500	\$77,500	2.30	\$1,783
				12:01 AM										

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OPTIONAL ENDORSEMENTS: As required by the policy, Optional Endorsements selected for a crop on a policy will be applied to all lines of that crop.

OPTIONAL ENDORSEMENTS

THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:	TO	GROUP DISCOUNT: <input type="checkbox"/>	GROSS PREMIUM: \$258,56
RCCS P.O. Box 38 Anoka, MN 55303-0038	AL S	PMP DISCOUNT: \$12,591	NET PREMIUM: \$245,976.00

Policy Issuance documents are available for online viewing at RCIS.com. Go to RCIS.com, select 'Retrieve Crop Provisions', enter this policy number, state, and crop year to view the Crop Insurance provisions for your insured crops. If you are enrolled in RCIS.com for Producers, your information is available from your Document Library. If you would prefer to receive a paper copy, please contact your agent.

BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0004

Case 5:13-cv-04106-CJW Document 149-19 Filed 03/13/17 Page 4 of 45
Exhibit A, Pg. 004



FIREMAN'S FUND INSURANCE COMPANY
Managing General Agents for:

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

POLICY NUMBER: IA-090-120853
3. COUNTY: 4. CROP: 5. ACRES: 6. LIABILITY: 7. PREMIUM:

1. INSURED INFORMATION
BRUHN FARMS JOINT VENTURE
14-1252 01
TERRY NIELSEN AGENCY
TERRY NIELSEN
205 MAIN
PO BOX 87
IDA GROVE IA 51445-0087
(712) 882-2735
TAX ID: XX-XXX9925
LOSS PAYABLE:
14-1252 01
TERRY NIELSEN AGENCY
TERRY NIELSEN
205 MAIN
PO BOX 87
IDA GROVE IA 51445-0087
(712) 364-2431
EFFIC 0005

9. LINE	10. COUNT	11. ADDITIONAL LOCATION ID	12. LEGAL SECTION(S)	13. TEMP- RNG	14. CROP	15. SHARE	16. FORM	17. PREV LOSS%	18. ACRES	19. PA	20. LIABILITY	21. RATE	22. PREMIUM
16.00	1	133-MONONA		006 084N-043W	CORN	1.000	BASIC		123.50	\$500	\$61,750	2.30	\$1,425.00
17.00	1	133-MONONA		008 12:01 AM	082N-042W	CORN	1.000	BASIC	72.00	\$500	\$36,000	2.30	\$820.00
18.00	1	133-MONONA		EFFECTIVE: 05-23 004 sw33-086n044w	085N-044W	CORN	1.000	BASIC	210.00	\$500	\$105,000	2.30	\$2,415.00
19.00	1	047-CRAWFORD		EFFECTIVE: 05-23 028	085N-041W	CORN	1.000	BASIC	155.00	\$500	\$77,500	2.10	\$1,622.00
20.00	1	193-WOODBURY		EFFECTIVE: 05-23 020,021	086N-043W	CORN	1.000	BASIC	200.00	\$500	\$100,000	3.30	\$3,300.00
21.00	1	193-WOODBURY		EFFECTIVE: 05-23 020	086N-043W	CORN	1.000	BASIC	100.00	\$500	\$50,000	3.30	\$1,650.00
22.00	1	193-WOODBURY		EFFECTIVE: 05-23 004	087N-045W	CORN	1.000	BASIC	140.00	\$500	\$70,000	3.30	\$2,310.00
23.00	1	193-WOODBURY		EFFECTIVE: 05-23 004	087N-045W	CORN	1.000	BASIC	1.20	\$500	\$600	3.30	\$2,040.00
24.00	1	133-MONONA		EFFECTIVE: 05-23 12:01 AM	085N-042W	SBEAN	1.000	BASIC	142.00	\$500	\$71,000	5.00	\$3,550.00

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OPTIONAL ENDORSEMENTS: As required by the policy, Optional Endorsements selected for a crop on a policy will be applied to all lines of that crop.

OPTIONAL ENDORSEMENTS

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THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:
RCIS
P.O. Box 38
Anoka, MN 55303-0038

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Policy Issuance documents are available for online viewing at RCIS.com. Go to RCIS.com, select 'Retrieve Crop Provisions', enter this policy number, state, and crop year to view the Crop Insurance provisions for your insured crops. If you are enrolled in RCIS.com for Producers, your information is available from your Document Library. If you would prefer to receive a paper copy, please contact your agent.

BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0006



Managing General Agents for:

FIREMAN'S FUND INSURANCE COMPANY

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

1. INSURED INFORMATION		2. AGENT/AGENCY INFORMATION		3. COUNTY		4. CROP		5. ACRES		6. LIABILITY		7. PREMIUM	
BRUHN FARMS JOINT VENTURE		14-1252 01 TERRY NIELSEN AGENCY 205 MAIN PO BOX 87 IDA GROVE IA 51445-0087 (712) 364-2431											

LOSS PAYABLE:

14-1252 01
TERRY NIELSEN AGENCY
205 MAIN
PO BOX 87
IDA GROVE IA 51445-0087
(712) 364-2431

LOSS PAYABLE:

FFIC 0007

8. TOTALS:		19. IPA		20. LIABILITY		21. RATE		22. PREMIUM					
9. LINE	10. COUNTY	11. ADDITIONAL LOCATION ID	12. LEGAL SECTION(S)	13. TWS. RNG	14. CROP	15. POLICY FORM	16. OPTIONS	17. PREV. LOSS%	18. ACRES				
25.00	133-MONONA	EFFECTIVE: 05-23	006, 007 031	12:01 AM 083N-042W	SBAN	1.000	BASIC		260.00	\$500	\$130,000	5.00	\$6,500
26.00	133-MONONA	EFFECTIVE: 05-23	031	12:01 AM 085N-042W	SBAN	1.000	BASIC		475.00	\$500	\$237,500	5.00	\$11,875
27.00	133-MONONA	EFFECTIVE: 05-23	031	12:01 AM 084N-042W	SBAN	1.000	BASIC	69.00	\$500	\$34,500	5.00	\$1,725	
28.00	133-MONONA	EFFECTIVE: 05-23	032, 033	12:01 AM 084N-042W	SBAN	1.000	BASIC		620.00	\$500	\$310,000	5.00	\$15,500
29.00	133-MONONA	EFFECTIVE: 05-23	008, 009	12:01 AM 084N-042W	SBAN	1.000	BASIC		230.00	\$500	\$115,000	5.00	\$5,750
30.00	133-MONONA	EFFECTIVE: 05-23	009	12:01 AM 084N-042W	SBAN	1.000	BASIC		150.30	\$500	\$75,150	5.00	\$3,750
31.00	133-MONONA	EFFECTIVE: 05-23	001	12:01 AM 084N-043W	SBAN	1.000	BASIC		101.00	\$500	\$50,500	5.00	\$2,525
32.00	133-MONONA	EFFECTIVE: 05-23	002, 012	12:01 AM 084N-043W	SBAN	1.000	BASIC		255.00	\$500	\$127,500	5.00	\$6,375
33.00	133-MONONA	EFFECTIVE: 05-23	006	12:01 AM 084N-043W	SBAN	1.000	BASIC		20.00	\$500	\$10,000	5.00	\$500

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OPTIONAL ENDORSEMENTS

P A Y M E N T O R V I S O N S	THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:	GROUP DISCOUNT: <input type="checkbox"/>		GROSS PREMIUM:		PMP DISCOUNT:		NET PREMIUM:	
		TO	AT	TO	AT	TO	AT	TO	AT
	RCIS P.O. Box 38 Anoka, MN 55303-0038							\$245,976.00	

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BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0008



FIREMAN'S FUND INSURANCE COMPANY
Managing General Agents for:

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

1. INSURED INFORMATION

BRUHN FARMS JOINT VENTURE
14535 WALNUT AVE
MAPLETON IA 51034
(712) 822-2735
TAX ID: XX-XXX9925
LOSS PAYABLE:

2. AGENT/AGENCY INFORMATION

14-1252-01
TERRY NIELSEN AGENCY
TERRY NIELSEN
205 MAIN
PO BOX 87
IDA GROVE IA 51445-0087
(712) 364-2431

3. COUNTY

4. CROP

5. ACRES

6. LIABILITY

7. PREMIUM

POLICY NUMBER
IA-090-120853

3. COUNTY

4. CROP

5. ACRES

6. LIABILITY

7. PREMIUM

18. TOTALS:
19. IPA
20. LIABILITY
21. PREMIUM
22. PREMIUM
EFFIC 0009

9. LINE	10. COUNTY	11. ADDITIONAL LOCATION ID	12. LEGAL SECTION(S)	13. DESCRIPTION	14. CROP	15. POLICY FORM	16. OPTIONS	17. PREV. LOSS%	18. TOTALS:	19. IPA	20. LIABILITY	21. PREMIUM	22. PREMIUM
34.00	133-MONONA	3-085N-043W	002	084N-043W	SBEAN	1.000	BASIC		70.00	\$500	\$35,000	5.00	\$1,750.00
35.00	133-MONONA	EFFECTIVE: 05-23	009	085N-043W	SBEAN	1.000	BASIC		110.00	\$500	\$55,000	5.00	\$2,750.00
36.00	133-MONONA	EFFECTIVE: 05-23	12:01 AM	085N-043W	SBEAN	1.000	BASIC		1,276.50	\$500	\$638,250	5.00	\$31,913.13
37.00	133-MONONA	EFFECTIVE: 05-23	004, 005	085N-043W	SBEAN	1.000	BASIC		290.00	\$500	\$145,000	5.00	\$7,250.00
38.00	133-MONONA	EFFECTIVE: 05-23	006	084N-042W	SBEAN	1.000	BASIC		230.00	\$500	\$115,000	5.00	\$5,750.00
39.00	133-MONONA	EFFECTIVE: 05-23	007, 008	085N-043W	SBEAN	1.000	BASIC		1,120.00	\$500	\$560,000	5.00	\$28,000.00
40.00	133-MONONA	EFFECTIVE: 05-23	018	084N-043W	SBEAN	1.000	BASIC		152.20	\$500	\$76,100	5.00	\$3,805.00
		EFFECTIVE: 05-23	023, 025	084N-043W	SBEAN	1.000	BASIC						
			026, 035	084N-043W	SBEAN	1.000	BASIC						
			036	083N-043W	SBEAN	1.000	BASIC						
		EFFECTIVE: 05-23	12:01 AM										

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OPTIONAL ENDORSEMENTS

PERIOD	THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:	GROUP DISCOUNT: <input type="checkbox"/>	GROSS PREMIUM:	\$258,567
RCIS	R.C.I.S. P.O. Box 38 Anoka, MN 55303-0038	PMP DISCOUNT:	NET PREMIUM:	\$12,591 \$245,976.00

Policy Issuance documents are available for online viewing at RCIS.com. Go to RCIS.com, select 'Retrieve Crop Provisions', enter this policy number, state, and crop year to view the Crop Insurance provisions for your insured crops. If you are enrolled in RCIS.com for Producers, your information is available from your Document Library. If you would prefer to receive a paper copy, please contact your agent.

BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0010



Managing General Agents for:

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

FIREMAN'S FUND INSURANCE COMPANY

POLICY NUMBER: IA-090-120853

1. INSURED INFORMATION

BRUHN FARMS JOINT VENTURE
14535 WALNUT AVE
MAPLETON IA 51034
(712) 882-2735
TAX ID: IX-XXX9925
LOSS PAYABLE:

2. AGENT/AGENCY INFORMATION

14-1252 01
TERRY NIELSEN AGENCY
TERRY NIELSEN
205 MAIN
PO BOX 87
IDA GROVE IA 51445-0087
(712) 364-2431

3. COUNTY

4. CROP

5. ACRES

6. LIABILITY

7. PREMIUM

9. LINE	10. COUNTY	11. ADDITIONAL SECTION(S)	12. LEGAL DESCRIPTION	13. TWP. RNG.	14. CROP	15. POLICY FORM	16. PREV. OPTIONS	17. PREV. LOSS%	18. TOTALS: ACRES	19. IPA	20. LIABILITY	21. RATE	22. PREMIUM
41.00	133-MONONA	014	083N-043W	SBEBAN	1.000	BASIC			120.00	\$500	\$60,000	5.00	\$3,000.00
42.00	133-MONONA	027	085N-044W	SBEBAN	1.000	BASIC			380.00	\$500	\$190,000	5.00	\$9,500.00
43.00	047-CRAWFORD	007	085N-041W	SBEBAN	1.000	BASIC			155.00	\$500	\$77,500	5.60	\$4,340.00
44.00	193-WOODBURY	030	086N-042W	SBEBAN	1.000	BASIC			75.00	\$500	\$37,500	6.30	\$2,363.00
45.00	193-WOODBURY	013	086N-044W	SBEBAN	1.000	BASIC			40.00	\$500	\$20,000	6.30	\$1,260.00
46.00	193-WOODBURY	018	086N-043W	SBEBAN	1.000	BASIC			120.00	\$500	\$60,000	6.30	\$3,780.00
47.00	193-WOODBURY	019	086N-043W	SBEBAN	1.000	BASIC			80.00	\$500	\$40,000	6.30	\$2,520.00
48.00	193-WOODBURY	018	087N-043W	SBEBAN	1.000	BASIC			40.00	\$500	\$20,000	6.30	\$1,260.00
49.00	193-WOODBURY	032	086N-043W	SBEBAN	1.000	BASIC			130.00	\$500	\$65,000	6.30	\$4,095.00

DISCLAIMER STATEMENT: If a revised Schedule of Insurance (SOI) is not furnished to us within 10 days of planting/seeding being complete for the crops listed on the binder, coverage will continue and premium will be charged based upon the original information submitted on the binder. If you choose to cancel bound crop lines after insurance has attached, cancellation provisions contained in the Crop Hail policy will determine the procedure that will be followed.

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OPTIONAL ENDORSEMENTS

P A Y M E N T	THIS IS NOT A BILL: However, if you would like to pay your premium, mail to:	TO T A L S	GROUP DISCOUNT: <input type="checkbox"/> GROSS PREMIUM: \$258,561	PMP DISCOUNT: \$12,591
	RCIS P.O. Box 38 Anoka, MN 55303-0038		NET PREMIUM: \$245,976.00	

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BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0012



Managing General Agents for
FIREMAN'S FUND INSURANCE COMPANY

2012 CROP HAIL INSURANCE
POLICY DECLARATION PAGE
ISSUE DATE: 6/07/2013

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BRUHN FARMS JOINT VENTURE

14535 WALNUT AVE
MAPLETON IA 51034

FFIC 0014

GENERAL PROVISIONS

AGREEMENT TO INSURE: We will provide the insurance described in this policy in return for the premium and compliance with all applicable provisions. If a conflict exists between the terms of the General Provisions and the Special Provisions, the terms of the Special Provisions will apply. If a conflict exists between the terms of a special crop endorsement and the General Provisions or Special Provisions, the special crop endorsement will apply.

1. COVERAGE.

We cover the crops specified at the locations described in the Schedule of Insurance.

We do not cover crops that have been damaged by an insured peril(s), as defined in the Special Provisions, prior to signing the application, unless agreed to in writing by us.

2. INSURANCE PERIOD.

The insurance is in effect from the time the crop is clearly visible above the ground until the crop is harvested, except as follows:

- a. Policy Provisions shall take effect the earlier of 12:01 a.m. on the date following the date you and the agent sign the application; or 2 hours from the time the application is received in the appropriate processing office.
- b. For some crops, there is an additional waiting period if shown in the Special Provisions or in a special crop endorsement.
- c. Coverage expires on the dates shown in the Special Provisions or special crop endorsement.
- d. *Increase of Existing Insurance*
Insurance added to this policy becomes effective at 12:01 a.m. on the date following the date you and the agent sign the revised Schedule of Insurance; or 2 hours from the time the revised Schedule of Insurance is received in the appropriate processing office. We will not increase insurance if damage by an insured peril has already occurred, unless agreed to in writing by us.
- e. *Decrease of Existing Insurance*
Reduction or cancellation of insurance will be effective at 12:01 a.m. of the date requested.
- f. *Policy Term*
Your policy is in effect only until coverage expires and only for the crop year specified in the application. If you elect to purchase a new policy for the next or future crop years, we reserve the right to change any terms or provisions of the policy contract.

3. DUTIES AFTER LOSS.

a. *Your Duties Are:*

In case of a probable loss to crops insured under this policy you must:

- (1) Give written notice to us within 10 days after the occurrence of one of the insured perils.
- (2) Continue to care for each damaged field of insured crop until we have examined the field; provided, however, that with our written consent, you may preserve representative samples in each damaged field of insured crop.
- (3) Allow us to examine the damaged crop as often as we reasonably require.
- (4) Upon our request, provide a complete harvesting and marketing record of each insured crop.
- (5) Upon our request, submit to an examination under oath.
- (6) Sign a Withdrawal of Claim when our inspection of the crop determines that there is no payable loss under the terms of this policy.
- (7) Within 60 days after your loss, unless we extend such time in writing, submit to us a signed statement in proof of loss declaring your loss and interest in the crop.
- (8) If a claim is made on other insurance arising from the same occurrence for which a claim is made on this policy, upon our request, provide us with all claims material relating to the other insurance.

b. *Our Duties Are:*

- (1) Adjust all losses.

- (2) Pay the loss within 30 days after we reach agreement with you, entry of a final judgment, or the filing of any appraisal award with us.

c. *Adjustment Procedures.*

Both you and we agree that the percentage of loss will be determined using the crop-hail loss adjustment procedures published by National Crop Insurance Services, or in the absence of such procedures, other

procedures as determined by us, for the particular crop insured and the applicable crop year.

d. *Deferred Adjustment.*

At times it may be necessary for us to defer the adjustment of a covered loss until the percentage of loss can be determined. You must continue to care for the damaged field of insured crop during this deferral period until the percentage of loss can be determined.

4. LOSS PAYMENT.

- a. The amount payable per acre will be the limit of insurance applying on the date of the loss multiplied by the percentage of loss. However, the amount payable may not exceed the actual cash value of the portion of the crop destroyed by perils insured against.
- b. If a crop loss is also covered by other crop -hail insurance, we will pay only the proportion of the loss that our limit of insurance bears to the total amount of insurance, provided, however that no crop insurance reinsured or approved by the Federal Crop Insurance Corporation will be prorated with this policy. If a crop loss is also covered by other insurance, including but not limited to the following examples, farm property insurance or farm and ranch insurance, then we will pay only for the excess of such loss beyond the amount due from such other insurance, whether collectible or not, and not exceeding our limits of insurance.

5. REDUCTION OF INSURANCE.

The limit of insurance applying to each acre of insured crop will be reduced:

- a. By the gross percentage of loss determined for each loss.
- b. By the same percentage as each acre of crop is harvested.

6. APPRAISAL.

If you and we fail to agree on the percentage of loss caused by one of the insured perils, the following procedure will be used:

- a. The entire crop or a representative sample of the crop, as defined in the policy, must remain intact until a determination of the percentage of loss is rendered by these procedures.
- b. One of us will demand in writing that the percentage of loss be set by appraisal.
- c. Each of us will select a competent appraiser and notify the other of the appraiser's identity within 10 days after receipt of the written demand.

- d. The two appraisers will then select a competent, impartial umpire. If within 10 days of the selection of the appraisers, the two appraisers are unable to agree upon an umpire, you or we can ask a judge of a court of record, in the state which the insured crop is grown, to select an umpire. If the court fails to act on the request within 30 days, you or we can ask the American Arbitration Association to select an umpire.
- e. The appraisers will then set the percentage of loss in accordance with provision 3.c . The appraisers' written agreement will be final and binding upon you and us.
- f. If the appraisers fail to agree within 10 days, they will submit their difference to the umpire. Written agreement signed by any two of these three will set the percentage of loss. This written report of an agreement will be final and binding upon you and us.
- g. In the event you or we fail to select an appraiser within the time allowed herein, the appraiser selected by the other party will set the percentage of loss and his written report will be final and binding upon you and us.
- h. The determination of the percentage of loss rendered by these procedures may be entered in any court of competent jurisdiction as a final judgment.

Each appraiser will be paid by the party selecting that appraiser. Other expenses of the appraisal and compensation of the umpire will be paid equally by you and us.

We will not be held to have waived any of our rights by any act relating to the appraisal.

7. LIBERALIZATION.

If we adopt any revision which would broaden the coverage under this policy without additional premium, the broadened coverage will apply.

8. VARIATION IN ACREAGE IN CASE OF LOSS.

When the actual acreage of a crop differs from the number of acres stated by item in the Schedule of Insurance:

- a. A revised Schedule of Insurance per acre will be obtained by dividing the limit of insurance by the actual acreage at the location for such item.
- b. The total insurance per acre on your insured interest will not exceed the value of the crop at the time of loss.

9. ENTIRE AGREEMENT, WAIVER OR CHANGE OF POLICY PROVISIONS.

This policy, the application as accepted by us, and any endorsements issued by us and attached hereto constitute the entire agreement between you and us. A waiver or change of any provision must be in writing and approved by us. Our request for an appraisal or examination will not waive any of our rights.

10. ASSIGNMENT OF INTEREST.

You may not assign your interest in this policy without our written consent.

11. ASSIGNMENT OF INDEMNITY.

You may assign to another party your right to an indemnity for the crop year only on our form and with our approval. The assignee will have the right to submit the loss notices and forms required by the policy.

12. CONCEALMENT OR FRAUD.

We do not provide coverage for any insured who has intentionally concealed or misrepresented any material fact or circumstance relating to this insurance, either before or after a loss.

13. CANCELLATION OF POLICY.

a. By You:

If you cancel or reduce coverage prior to inception of the insurance period, we will refund your paid premium for the amount of insurance canceled. If you cancel or reduce coverage during the insurance period, we will not refund any premium.

b. By Us:

We may cancel all or any part of the insurance provided by us at any time by notifying you in writing at least 10 days before the date and hour cancellation takes effect. Notices of cancellation may be delivered or mailed to you at your mailing address shown in the declarations. Proof of mailing will be sufficient proof of notice.

If we cancel all or any part of this policy, we will return the premium paid for the amount of insurance per acre on the portion canceled.

(State law exceptions to the 10 days notice of cancellation, if any, are contained in the Special Provisions and/or state endorsements.)

14. EXCLUSIONS.

We do not cover:

- a. Loss from any peril not insured against, even though the loss may have occurred in conjunction with a peril insured against.
- b. Consequential, or indirect damages, such as but not limited to diseases, insect infestation, lodging, loss of markets, etc.
- c. Loss of any portion of a crop recoverable by harvesting equipment.

- d. Loss due to your neglect or failure to harvest mature crops.
- e. Injury or damage to the vegetative or flowering portion of any plant, tree or shrub, except to the extent that the injury results in a loss to that crop.
- f. Any loss that has been contributed to by nuclear reaction, radiation, or radioactive contamination, all whether controlled or uncontrolled or however caused, or any consequence of any of these.
- g. Any loss caused in whole or in part due to pollution or contamination caused by the discharge or escape of any pollutants or contaminants.

15. ABANDONMENT OF CROP.

We will not accept abandonment to us of any interest in any crop.

16. SUIT AGAINST US.

You cannot bring suit or action against us unless you have complied with all of the policy provisions.

If you do enter suit against us you must do so within 12 months of the occurrence causing loss or damage.

(State law exceptions to the 12 months limitation, if any, are contained in the Special Provisions and/or state endorsements.)

17. CONFORMITY TO STATUTES.

If any terms of this policy are in conflict with statutes of the state in which this policy is issued, the policy will conform to such statutes.

18. SUBROGATION. (Recovery of loss from a third party)

Because you may be able to recover all or a part of your loss from someone other than us, you must do all you can to preserve any such rights. If we pay you for your loss, your right of recovery will belong to us. If we recover more than we paid you plus our expenses, the excess will be paid to you.

19. INSPECTIONS.

We will be permitted, but not obligated, to inspect your property and operations at any time. Neither our right to make inspections, nor the making thereof, nor any report thereon, will constitute an undertaking on your behalf or for your benefit or the benefit of others, to determine or warrant that such property or operations are safe or healthful, or are in compliance with any law, rule or regulation.

20. PRE-JUDGMENT INTEREST.

If you and we do not reach agreement on the amount of loss, and whether we determine the amount of loss through the appraisal process or you file suit against us, you are not entitled to pre-judgment interest.

CROP-HAIL POLICY - BASIC FORM
SPECIAL PROVISIONS
IOWA

1. PERILS INSURED AGAINST

We insure for direct loss to the crops described in the Schedule of Insurance caused by:

- a. *Hail*
- b. *Fire and Lightning*

We cover loss by fire and lightning before harvest and while crop is still in the harvester except that fire and lightning will not apply to any crop that has been planted in the current year small grain crop, stubble or residue.

- c. *Transit Coverage*

While the harvested crop is being transported to the first place of storage not to exceed 100 miles, this policy is extended to cover loss caused by:

- (1) Fire and Lightning
- (2) Windstorm
- (3) Collision
- (4) Overturn
- (5) Collapse of bridges, docks and culverts

However, *Transit Coverage* is excess over any other valid and collectible insurance.

FIRST PLACE OF STORAGE means any drying apparatus, drying bins or storage facility of any kind.

- d. *Fire Department Service Charge*

We will pay up to \$250 for your obligation assumed by contract or agreement for fire department charges incurred when the fire department is called to save or protect the unharvested crop.

No Excess Over Loss or Deductible shall apply to Fire, Lightning and Transit Coverage or Fire Department Service Charge.

- e. *Vandalism & Malicious Mischief.* This company shall be liable for willful and malicious damage to or destruction of growing farm field crops named herein at locations specified on the Schedule of Insurance.

The company shall be liable for the entire amount specified in the declarations and not exceeding the actual cash value. This coverage expires on December 31st.

Ownership--The liability of the company in the event of loss shall be limited in any event to cover only the actual ownership interest of the insured. In the event there is an ownership interest not disclosed by the insured in his application for insurance, the amount of insurance per acre shall be reduced in proportion to such undisclosed ownership interest. In no event shall

the company be liable for loss sustained by any person, firm or corporation, other than the insured arising by reason of all or part of the insured crop being grown by the insured under contract for such person, firm or corporation unless it is specifically insured by this company and an appropriate premium paid for such insurance.

2. CATASTROPHE LOSS AWARD

When a loss exceeds 70% on any acre of the insured crop an additional amount of one-half of the percent of loss that is in excess of 70% shall be paid. However:

- a. the total amount payable per acre shall not exceed the amount of insurance applying at the time of loss;
- b. this award will not be paid if the loss is subject to any Excess Over Loss or Deductible provision which does not disappear at or less than 70% loss.

3. CANNING BEANS AND CANNING PEAS

Insurance on canning beans and canning peas shall expire 60 days after the crop is clearly visible above the ground.

4. CORN AND SORGHUM SEED PRODUCTION

On corn grown for seed purposes, the amount of any loss will be determined in the same manner as for ordinary field corn. On sorghum crops grown for seed purposes, the amount of any loss will be determined in the same manner as for ordinary field sorghum.

5. HAY, FORAGE AND GRASS CROPS

- a. For hay, forage or other crops harvested more than once each growing season, the limit of insurance per acre provided for each cutting or harvest shall be determined by dividing the total insurance per acre by the number of cuttings or harvests.
- b. If your Schedule of Insurance specifies a limit of insurance per acre for each cutting or harvest, Section (a) shall not apply.
- c. When hay and grass crops grown for seed are insured:
 - (1) The insurance shall apply only to the cutting to be harvested for seed.
 - (2) For crops other than alfalfa, until the seed is set, a maximum of 25% of the insurance per acre stated in the Schedule of Insurance will apply.
 - (3) For alfalfa seed production, prior to sufficient pollinator bees in hives being placed in the field, a maximum of 25% of the insurance per acre stated in the Schedule of Insurance will

apply. On the day after the bees have been placed and each following day, an additional 3% becomes effective until 100% of the limit of insurance is in effect.

6. REPLANTING DESTROYED CROPS

When any acre of soybean crop has been damaged by hail to the extent that replanting is necessary, as determined by us, and you choose to replant to the same crop, you may at the time the loss is adjusted, select one of the following two options to apply to your claim.

- a. We will reimburse you for your actual expenses of replanting not to exceed 20% of the insurance applying to each acre of crop replanted, plus any percentage of loss due to a delay in replanting according to the tables, if any, published in the National Crop Insurance Services soybean loss adjustment procedures, less any applicable deductible. The late planting allowance will be subtracted from the amount of insurance per acre applying to each acre of crop insured and the balance of the insurance per acre will continue on the replacement crop. No Excess Over Loss or Deductible provision will apply to the replant award.

OR

- b. We will apply the total insurance per acre to the first insured soybean crop planted. The loss payment shall be the amount of insurance per acre applying, multiplied by the agreed percentage of loss, less any applicable deductible. Insurance not used from the loss on the first planted soybean crop shall carryover to the second planted crop, provided the second planted crop is soybeans.

Once a damaged crop has been replanted or inter-planted, the company shall not be liable for any subsequent loss on such prior original crop.

7. TERM OF POLICY

This insurance covers for the current growing season, crops grown at the locations stated in the Schedule of Insurance. Subject to our consent, this policy may be continued in force for the successive growing season for the crops listed on the Crop Classification page of the Crop-Hail Rates and Rules Manual.

For all other crops this is an annual policy.

We will extend the option for you to insure crops eligible for continuous coverage and insured by you the previous growing season at the same limit of insurance per acre (subject to current year rates and rules limits) until we receive your revised Schedule of Insurance, you cancel or replace this policy by another crop-hail policy or the suspension date, whichever is earlier. If you exercise this option after your crops have had hail damage, but before the suspension date, If we cancel all or any part of this policy, we will return the premium paid for the amount of insurance per acre on the

and you are or will be growing crops insured the previous year, during the current year, you must insure all crops insured on the policy the previous year at the same insurance per acre (subject to current year rates and rules limits) using the same policy form you had the previous year. This option will be suspended if you do not furnish us with this revised Schedule of Insurance for the current growing season prior to 12:01 a.m. standard time May 15 for small grains and June 1 for all other crops listed. Thereafter your insurance will be reinstated only after you have submitted a new application for insurance.

No loss will be adjusted until a revised Schedule of Insurance has been received and processed by the company. During the period of extension we shall also cover any crop not grown during the previous growing season that you substitute in full for the acreage of a crop insured the previous growing season, provided the substitute crop is eligible for continuous coverage. The limit of insurance per acre on this substitute crop shall not exceed 50% of the limit of insurance per acre of the previously insured crop it replaces.

The premium that we charge you for each growing season will be based upon rates in effect for that growing season.

8. CANCELLATION OF POLICY. (Exception to General Provisions)

a. By You

In the event of known failure of an insured crop, and there has been no loss paid under the policy, you may apply in writing for cancellation or partial cancellation and receive a prorata return of paid premium on the portion canceled. Subject to the minimum policy premium of \$25.00, we will retain premium earned as of the date of your request for cancellation calculated on the basis of term beginning the later of your policy inception date or May 15 to July 15 on small grains (such as wheat, barley, oats and rye) and from June 1 to September 1 for all other crops.

b. By Us

We may cancel all or any part of the insurance provided by us at any time by notifying you in writing at least 30 days before the date and hour cancellation takes effect. However in the event of non-payment of premium we may cancel by notifying you in writing 10 days before the date and hour cancellation takes effect. Notices of cancellation may be delivered or mailed to you at your mailing address shown in the declarations. Proof of mailing will be sufficient proof of notice.

If we cancel all or any part of this policy, we will return the premium paid for the amount of insurance per acre on the portion canceled

9. EXPIRATION OF INSURANCE

Coverage ceases at 12:01 a.m. on the following dates of the current year;

Hail coverage:	Fire, Lightning and Transit coverage:
All crops	December 31

OPTIONAL PROVISIONS

Your application and rate of premium determine whether your coverage will be amended by one of the following optional provisions.

EXCESS OVER 5% LOSS - DISAPPEARING AT 25% - PROVISION (SYMBOL: DXS5)

We shall not cover any loss until the percentage of loss per acre exceeds 5%. The percentage per acre then payable shall be the percent in excess of 5%, multiplied by 1.25. Once the percentage of loss equals or exceeds 25% this provision shall no longer apply.

OPTIONAL DISAPPEARING DEDUCTIBLE – PROVISION (SYMBOL: DDA)

We will not cover any loss until the percentage of loss per acre exceeds 10%. The percentage per acre then payable will be the percent in excess of 10%. Once the percent of loss exceeds 20%, an additional 2% will be paid for each percent of loss in excess of 20%, up to a maximum of 25% at which percentage this provision will no longer apply.

EXCESS OVER 10% LOSS - DISAPPEARING AT 50% - PROVISION (SYMBOL: DXS10)

We shall not cover any loss until the percentage of loss per acre exceeds 10%. The percentage per acre then payable shall be the percent in excess of 10%, multiplied by 1.25. Once the percentage of loss equals or exceeds 50% this provision shall no longer apply.

EXCESS OVER 25% LOSS - DISAPPEARING AT 75% - PROVISION (SYMBOL: DXS25)

We shall not cover any loss until the percentage of loss per acre exceeds 25%. The percentage per acre then payable shall be the percent in excess of 25%, multiplied by 1.50. Once the percentage of loss equals or exceeds 75% this provision shall no longer apply. Catastrophe Loss Award does not apply to this endorsement.

COMBINATION POLICY - 50% BASIC - 50% DXS10 – PROVISION (SYMBOL: BDSX10)

Liability shown in the Schedule of Insurance shall be considered to be 50% basic coverage and 50% DXS10 coverage and the percentage of loss applied accordingly.

CROP-HAIL INSURANCE
MANDATORY ENDORSEMENT

HARVESTED STORED GRAIN ENDORSEMENT

We cover your insurable interest in the crop(s) and acreage as listed in the Schedule of Insurance of your underlying Crop-Hail Policy, and while under the care and custody of either you or your tenant, against loss from the following named perils, subject however to special exclusions, conditions, limits of insurance, deductible and coinsurance as hereafter set forth. Note: The coverage extended through this endorsement is excess only offering coverage above and beyond that which is due you from other insurance, not to exceed the applicable amount of insurance as set forth in the Schedule of Insurance.

PERILS INSURED AGAINST:

1. FIRE AND LIGHTNING
2. WINDSTORM OR HAIL, when loss to the insured grain occurs as a result of damage caused by the direct force of wind or hail to a permanent grain storage structure housing the insured grain. The structure must be sealed and secure with the floor, walls and roof consisting of either concrete, wood or metal.
3. EXPLOSION, but excluding loss by explosion of steam boilers, alcohol stills, steam pipes or steam engines.
4. VEHICLES OR AIRCRAFT, meaning only direct loss resulting from actual physical contact of a land vehicle or aircraft with the covered property or the building containing the covered property and direct loss by objects falling from the aircraft, but excluding loss caused by any vehicle owned or operated by you or your tenant.
5. UPSET OR OVERTURN, meaning loss to insured grain as a result of upset or overturn of a vehicle, other than a common carrier, transporting the grain within 100 miles of the location where the insured crop is stored.
6. SMOKE, meaning only direct loss from smoke due to a sudden, unusual and faulty operation of any heating or drying unit, but excluding loss caused by smog, agricultural smudging or industrial operations.
7. VANDALISM OR MALICIOUS MISCHIEF, meaning only the willful and malicious damage to or destruction of the insured grain which is reported to local, county, state or federal law enforcement.
8. THEFT, meaning any act of theft, larceny or robbery of grain, all only while under the care and custody of either you or your tenant and which is reported to local, county, state or federal law enforcement. **NOT COVERED** are mysterious disappearance, inventory shortage, embezzlement or employee dishonesty, wrongful conversion, action of rodents, birds, animal or vermin, shrinkage or unaccountable shortage, or any circumstances not involving evidence of felonious entry or trespass at the location where the insured crops are stored. Upon knowledge of loss under this peril the insured shall give notice as soon as is practicable to the Company or its authorized agent and to the policy authorities.

SPECIAL EXCLUSIONS: Coverage does not apply to loss,

9. Caused directly or indirectly by nuclear reaction, meaning nuclear reaction, radiation or radio-active contamination; or
10. Resulting directly or indirectly from war or undeclared war.
11. Stored in or being processed in public elevators or warehouses, seed houses, drying plants or manufacturing plants.
12. Mixed or ground with another grain, product or material and/or commingled with like grain harvested from acreage not listed in the Schedule of Insurance.

SPECIAL CONDITIONS: The following additional conditions apply to this endorsement:

13. **PROTECTIONS OF GRAIN AFTER LOSS:** The insureds, their agents, employees or assigns, shall undertake reasonable care and measures to salvage grain after loss, including safeguarding of undamaged grain to minimize further grain loss. In consideration thereof, the company will pay actual labor and other necessary cost incurred in an amount not to exceed the sums per bushel set forth below for each specific type of grain. **Provided However,** the total amount payable for salvaging of grain shall not exceed five percent of the limit of insurance applicable to the type of crop for which loss is claimed.
14. **OTHER INSURANCE PROVISION:** The insurance provided by the endorsement is excess over any other valid and collectible insurance. We will cover only such amount of your loss, after application of co-insurance, as may exceed the amount due you from other insurance, not to exceed the applicable amount of insurance.
15. **LIMIT OF INSURANCE:** The limit of liability for this endorsement is as set forth in the Schedule of Insurance less any prior claim payments made under the crop-hail policy or endorsements thereto, whichever is less. In no event shall the company be liable for more than the amount of insurance for a specific crop as set forth in the Schedule of Insurance. Additionally, if the cash value of the crop is less than the available amount of insurance when such loss occurs, then the cash value figure will be used in the settlement of the loss.
16. **BASIS OF SETTLEMENT:** All losses will be adjusted using the actual cash value of the insured grain at the time of loss. The actual cash value is determined as the highest closing local market cash price of the insured grain within ten (10) days following the day of loss. In no event, however, shall the company be liable for more than the amount of insurance for a specific crop as set forth in the Schedule of Insurance, irrespective of the actual cash value of the crop. Therefore, if a loss occurs on the insured grain, then the loss settlement will be based upon the actual cash value of the crop or the limit of liability as set forth in the Schedule of Insurance less any prior claim payment under the subject crop-hail policy or endorsements thereto, whichever is less. Additionally, the company shall be entitled to a credit for any grain salvaged.
17. **DEDUCTIBLE CLAUSE:** Each claim for loss shall be adjusted individually and from the amount of each adjusted loss fifty (\$50.00) dollars shall be deducted.
18. **POLICY PERIOD:** Coverage becomes effective at the same time that coverage on the underlying crop-hail policy becomes effective and expires upon application for insurance with another insurance company or June 15th of the following crop season whichever is earlier, or your crops have been sold or delivered to a public elevator or warehouse or are no longer in the care or custody of you or your tenant.
19. All other terms and conditions of the policy not in conflict herewith shall remain unchanged.

CURRICULUM VITAE

JOHN M. BROWN, Ph. D. PRESIDENT, AIR, CORP.

ADDRESS: 2665 State Route P.
New Franklin, MO 65274
Telephone: 660- 888-8693
E-mail: john@aircorp.com

EDUCATION:

LEVEL	PLACE	DATE	DEGREE
Post Doctor Fellow	Duke University	1987-88	Plant Water Relations
Professional School	North Carolina State Univ.	1987	Ph.D. Horticulture
Graduate School	Texas A & M University	1983	M.S. Floriculture
University	East Texas State University	1981	B.S. Agri. Business
Junior College	Keystone Junior College	1968	None
High School	Clark's Summit, PA	1968	Diploma

Undergraduate degree emphasized agriculture business and management with a background in the basic sciences. Graduate degree at Texas A & M emphasized floriculture, biological control and agricultural economics. Conducted thesis work on the biological and chemical control of soil borne pathogens in container plant production. At North Carolina State University, studied container media water relationships with a minor in soils. With the support of a National Science Foundation grant, developed the use of medical Magnetic Resonance Imaging for investigating plant water relationships and root hydrodynamics with Paul Kramer at Duke University. MRI is a nondestructive technique useful in scanning rapid changes in water content in container media, providing an ability to actually see water moving through a soil mix or plant tissue within a container without disturbing the plant or mix. Co-developed greenhouse management software for budgeting, cash flow analysis, crop development and processing.

COURSE WORK RELATED TO AGRICULTURAL ECONOMICS:

Economics 201; Marketing; Finance 341; Farm Management 212; Agricultural Records and Accounts; Real Estate Finance 340; Business Accounting I & II; Statistics 375; Introduction to Business Finance 354; Math for Business Applications II 218; Business Law 355; Farm Marketing 316; Farm Management 314; Micro-Economic Theory 323; Agricultural Policy 614; Agricultural Marketing Operations 655; Statistics in Research I & II; Agricultural Business Analysis 619;

PROFESSIONAL HISTORY:

AGRICULTURAL INVESTIGATION AND RESEARCH CORPORATION (AIR, CORP)

1993 – Present.

Conducting scientific investigations in the areas of agricultural and environmental studies, serving as President of Air Corp since 1993. Activities include documenting and analyzing data, software development for data analysis, field investigations, courtroom testimony, consultation, conducting aerial investigations including visible light and infrared photography of surface features and activities, research design and development, business planning and budgeting.

Clientele includes agriculture businesses related to production of vegetables, fruits and nuts, turf and golf courses, greenhouses, nurseries, forestry, agronomic field crops, and agri-businesses such as buyers, coops, and farm products distributors. Other clients include insurance companies, law firms, the USDA, and the Department of Justice.

THREE MAJOR TYPES OF INVESTIGATIONS CONDUCTED:

PLANT INVESTIGATOR

Includes investigation of plant disorders chiefly related to pesticide and chemical injury to plants and property. Work with property owners and other professionals investigating the cause, source and extent of damage to plants and property. Investigations include site visits, client interviews, weather analysis, farm management records review, dendrochronological (tree ring) analysis, soil and tissue analysis, video and photograph acquisition, data analysis and presentation.

AGRICULTURAL ECONOMIC ANALYST

Duties include client interviews, document organization and analysis, software development for document evaluation, reporting and presentation. Focus on financial and production record review and analysis using computer spreadsheets and/or databases to extract and analyze financial and crop yield information. Develop software for whole-farm/business management including fiscal transactions, work/product flow, crop information, chemical application records, and reporting. Calculations of economic losses associated with property damage claims.

REMOTE SENSING ANALYST

Digital and visual analysis of airborne and satellite data to study changes in atmospheric conditions, vegetation, water and soils. Conduct image interpretation to study the impact of the weather, environment and farm/forestry practices on vegetation production and yield. Focus on vegetation development and analysis of plant health/vigor and factors contributing to plant condition. Study change detection to vegetation and land over time.

1989 - 1993

ASSISTANT PROFESSOR of Horticulture, Department of Plant Science, University of Missouri-Columbia, Columbia, MO 65211. Position included research, teaching, and extension duties in horticulture and greenhouse plant production.

1. **Research duties:** study of plant water relationships using magnetic resonance imaging (MRI) techniques; biological control of greenhouse insects and soil borne pathogens (i.e. pythium, rhizoctonia) using beneficial fungi (*Trichoderma* and *Gliocladium* spp.). Investigated the use of *Trichoderma* in greenhouse plug and cell pack production of bedding plants, and incorporation of *Trichoderma* conidia in ebb and flow production.
2. **Teaching responsibilities:** summer short course in greenhouse management and production and a two-semester course in greenhouse management and crop production and nursery production.
3. **Extension duties:** assisted Missouri greenhouse and nursery operators with production and management problems, set up field demonstration projects, organized grower meetings and short courses, chemical safety and handling, and on-site consultations. Development and implementation of computers and software for financial and production management in greenhouses and nurseries. Assisted crop producers on a statewide basis in developing and understanding financial and production records, budgets and reports.

PREVIOUS EMPLOYMENT AND EXPERIENCE:

1970-1971	Military Police	United States Army
1972-1978	Carpenter/Mechanic	Pennsylvania
	Farm Operator	Pennsylvania

Age eight: began working in agriculture, including dairy farms, beef operations, orchards and greenhouses Between the ages of sixteen to eighteen: designed and planted a tree farm with over 10,000 trees. Maintained and managed this forest until sale and harvest in 2001. Later began work in carpentry and construction.

In 1970 served as military policeman in U.S. Army stationed in Korea for 13 months.

In 1972 worked in mechanical field installing and repairing gymnasium equipment, stadiums, folding partitions, conveyors and machinery. Became skilled as a millwright, learning such techniques as welding, iron working, plumbing, electrical, layout and design, and mechanics.

In 1974 developed a company specializing in mechanical installation and repair. Bought and operated a farm in northeastern Pennsylvania. Developed accounting and management program for this construction company including accounting journal, payroll and income tax analysis.

In 1979 purchased ½ interest in a tavern in Commerce, Texas. Developed a computerized accounting program using early spreadsheet technology to maintain business records and for financial analysis. In 1981 owned and operated a lawn & property maintenance company in

College Station, Texas. Developed an accounting system for this company as well.

COMPUTER EXPERIENCE:

Background in computer operations includes IBM, UNIX, Macintosh, Windows, database and spreadsheet design, and image analysis. Developed dual processor workstation for digital image analysis and processing. Maintained, designed and purchased a small business LAN system. Experience in midi operations and audio/visual interface for music and video productions.

REPRESENTATIVE PROJECTS INCLUDE THE FOLLOWING:

1993 Floyd and Glenna Becker analysis for chemical spray drift from utility right of way. Evaluated economic damage to vegetables and trees resulting from drift of Tordon K and Tryclopyp from utility company spraying.

1994-2001 Evaluated crop damages for Arkansas, Georgia, Florida, Louisiana, Texas and Mexico peach and pecan growers from chemical injury allegedly caused by Benlate fungicide manufactured by DuPont. Worked with over 400 growers on over 18,000 acres of land. Worked with other experts to identify injury symptoms and causes, analyze records and tax returns, and complete economic damage assessments and statistical analyses.

1994 Florida Nursery and Greenhouse growers: worked with growers to determine cause of plant injury resulting from application of Benlate fungicide applications in herbaceous and woody plants.

1999 Shady Oaks Golf Course in Fort Worth, Texas: Evaluated injury to golf greens from jet fuel spill into irrigation river water. Worked with course managers to determine economic loss to greens and source of toxins.

2000 College Station, Arkansas, property owners: evaluated particle movement from granite processing facility owned and operated by 3M Corporation. Used aerial photographs to evaluate changes in property over a 30-year period. Conducted an on-site investigation and client interviews to document historic events related to dust movement from the processing site.

2000 Heritage, Arkansas, Tomato Growers Association: conducted economic loss evaluation for several tomato operations related to breakdown of plastic mulch during the season. The investigation included organization and analysis of farm production and financial records, tax returns, client interviews and on-site visits.

2000-2001 Department of Justice and USDA, Jonesboro, Arkansas crop fraud incident: used satellite imagery to detect changes in vegetation and soils related to an incident where a cotton farmer claimed to have planted cotton and other crops. Study successfully showed that crops were not planted and fraud had been committed.

2001 West Texas and Oklahoma Peanut Growers: Conducted field investigation and

economic loss analysis for over 90 farms for peanuts, corn, wheat and other crops resulting from chemical injury allegedly caused by Strongarm herbicide manufactured by Dow Elanco. Investigation included evaluation of farm financial and production records, FSA government yield documents, market analysis and client interviews.

2001-2002 Oklahoma Peanut Growers: Conducted field investigation and economic loss analysis for over 15 farms related to chemical injury caused by an herbicide, Valor, manufactured by Valent Corporation.

2001-2002 Smackover Oilfield Project: Conducted economic loss analysis of forest trees resulting from exposure to oil production salts and chemicals disbursed over 40 square miles in south Arkansas. Evaluation included yield analysis models showing future forest values and their present value, financial record evaluation and on-site evaluation of soil and tree condition. Analyzed historic and recent aerial photographs to evaluate tree condition, measure damaged acreage and determine source of toxins.

2001-2002 Department of Justice and USDA: Used satellite imagery to detect changes in vegetation and soils in several projects with the DOJ including Lubbock and Vernon, TX; Arkansas; Tennessee and North Carolina.

2001-2002 Department of Justice and USDA, Lubbock, Texas crop fraud investigation using satellite image analysis. Farmer convicted of fraudulent activities for grain sorghum and cotton yield claims.

2001- 2003 Department of Justice and USDA Texas, Iowa, California, Arkansas, Tennessee and North Carolina. Several investigations in progress using satellite image analysis for detection of crop fraud activities.

2002 Department of Justice and OIG, Fort Smith Arkansas, satellite investigation to determine tomato yield fraud on several Bradley County farms. Study successfully showed fraudulent activities in yield determination and settled favorably for the Department of Justice.

2003-2004 Department of Justice crop fraud investigation completed with testimony in Federal Court in Wichita Falls, Texas. Defendant was convicted on all counts. Satellite image analysis used to determine status of cotton, grain sorghum and haygrazer.

2004 Great American Insurance company crop insurance investigation testimony in Little Rock, Arkansas completed involving cotton yield switching.

2004 Department of Justice and OIG, Asheville, NC: Satellite investigation to determine tomato production fraud in North Carolina, South Carolina and Tennessee. Investigation resulted in a criminal conviction and also several plea bargains.

2005 Department of Justice and OIG, Bay City, Michigan. Satellite investigation to determine past potato production on Michigan farms resulting in a criminal conviction on all charges.

2005 Department of Justice and OIG, Sioux City, Iowa. Satellite investigation prevented planting claim in soybeans and corn resulting in a guilty plea.

2005 Brackettville, Texas water rights investigation successfully proved water use in 1970's with the use of satellite image analysis.

2005 Presented paper on use of remote sensing for crop fraud detection at the annual Photogrammetric Engineering and Remote Sensing Conference, March 11, 2005, Baltimore, MD.

2005 Presented workshop on remote sensing for use in litigation at the annual Photogrammetric Engineering and Remote Sensing Conference, March 7, 2005, Baltimore, MD.

2005 Howard Ivy Farms. Conducted image analysis studies to determine water availability and historical water rights on two locations in Dimmitt County, Texas.

2005 Department of Justice, Dallas, Texas, conducted a study and testified to fraudulent claim for wheat losses on 10,000 acres of land in Wilbarger County, Texas. Case successfully settled.

2005 Great American Insurance Co. Conducted investigation showing irrigation, grazing practices and lake levels in Ochiltree County, Texas. Successfully settled.

2005 Watkins Law Firm, San Antonio, Texas. Conducted economic analysis of fire damage to seed company in Brownfield, Texas. Case successfully settled.

2005 USDA/RMA and Farmers Mutual Hail Ins. Conducted investigation of wheat yield on farms in Roseau County, MN. Case successfully settled.

2005- 2009 The Quapaw Tribe. Conducted a financial analysis of agricultural losses incurred from mining activities. Ongoing investigation.

2006 Phil Watkins Law Firm. Conducted investigation and economic loss model for sweet potato losses resulting from chemical application defect. Successfully settled.

2006 USDA/RMA: Conducted investigation to determine impact of flooding on farms in Roseau County, MN. Successfully settled.

2006 ArmTech Insurance Company. Conducted investigation related to flooding and cotton crop management in Tallahatchie County, Mississippi. Successfully settled.

2006- 2009 Speer Law Firm, Kansas City, Missouri. Conducted investigations and testified concerning conditions at high density hog confinement facilities in northern Missouri. Ongoing investigation.

2006 Robert Harper, Phillips County Arkansas. Conducted satellite analysis to determine condition of rice fields after alleged hurricane damage. Settled.

2006- 2009 McMath Law Firm, Little Rock. Conducted economic study to show impact of facet herbicide drift on tomato, melon, and other vegetable crops in Arkansas. Successfully settled.

2006 Crop Insurance Research Bureau (CIRB). Conducted workshop on use of satellite imagery for evaluating potential crop insurance claims. Tampa, Florida.

2006 Great American Insurance Company. Conducted study of soybean crop yield switching in Foster County, ND. Case successfully arbitrated in Bismarck, North Dakota.

2006 Great American Insurance Company. Conducted satellite image analysis of irrigated corn production in Morrill County, Nebraska. Successfully arbitrated.

2006 Archer Daniels Midland. Conducted satellite image investigation of chemical spray injury to crops in McLean County, North Dakota. Case settled, no details on outcome.

2006 USDA Risk Management Agency. Conducted satellite image analysis of crops in Edmund County, South Dakota.

2006 Altman, Texas. Retained to use satellite imagery and other economic methods to determine impact of fire to grazing land and other farm land.

2007 James Chajoi. Conducted aerial and satellite analysis of landslide to irrigation river in Utah.

2007 Tom Hall. Conducted satellite analysis of water run-off into apartment complex in Dallas, Texas. Successfully settled.

2007 ArmTech Insurance Company. Conducted satellite image analysis to determine impact of flood on farm land in Cameron County, Texas. Case successfully settled.

2007-2009 Steven Miller, Elkhart, Kansas. Conducted economic and field investigation into cotton and corn production claims. Ongoing investigation.

2007-2011 Brad Allen, Stephenville, Texas. Conducted economic analysis of freeze and wind damage to ornamental nursery crops. Case ongoing.

2007-2011 Speer Law Firm. Conducted aerial inspection of high density swine facilities in northern Missouri. Testified in deposition and trial.

2007-2011 Phipps Law Firm, Texas. Conducted economic impact of gene contamination in long grain rice in Arkansas, Mississippi, and Texas. Ongoing investigation.

2008 Great American Insurance Company. Conducted satellite image analysis of soybean enterprises in Morrill County, Nebraska. Successfully arbitrated.

2008- 2009 USDA Risk Management Agency. Conducted satellite image analysis of corn production

in Delta County, Texas. Ongoing investigation.

2008-2009 Zavalletta Law Firm, Texas. Conducted financial analysis of tomato enterprise in Brownsville, TX. Ongoing.

2008-2011 Ray Selig, Michigan. Conducted financial analysis for apple, peach, cherry and asparagus injury resulting from chemical contamination.

2008 – 2010 McMath Law firm, Little Rock, AR. Conducted investigation into 2,4-D injury in cotton crop on east side of Crowley's Ridge.

2009-2010 Quapaw Information Systems. Conducted financial loss analysis for tribal trust assets. Ongoing investigation.

2009 Scherler Law Firm, Oklahoma. Conducted financial loss analysis for wheat damage in Oklahoma. Ongoing investigation.

2009-2011 Great American Insurance Co, Conducted satellite analysis for crop issues in several investigations related to agricultural crop production.

2011 Howard Ivy, Carrizo Springs, TX, Historical water rights analysis using satellite image interpretation and document evaluation.

2011 Michael Henley, Arkansas, analysis of herbicide injury on tomato crop.

2011 Speer Law Firm, Conducted investigation in French Camp, CA related to poultry operation contamination of near-by properties.

PROFESSIONAL ORGANIZATIONS

International Tree-Ring Society
Photogrammetry and Remote Sensing Society
American Chemical Society
Division of Petroleum Chemistry
International Arboriculture Society

SELECTED PUBLICATIONS

Brown, J.M., G.A. Johnson, and P.J. Kramer. In vivo magnetic resonance microscopy of changing water content in Pelargonium hortorum roots. 1986. Plant Physiol 82:1158-1160.

Johnson, G.A. Brown, J. M., Kramer, P.J. 1987. Magnetic resonance microscopy of changes in water content in stems of transpiring plants. Proc. Natl. Acad. Sci USA 84:2752-2755.

Brown, J.M., W.C. Fonteno, D.K. Cassel and G.A. Johnson. 1987. Computed tomographic analyses of water distribution in three porous foam media. Soil Sci. Soc. Am. J. 51:1121-1125.

Brown, J. M., Thomas, J.F., Cofer, G.P., Johnson, G.A. 1988. Magnetic resonance microscopy of stem tissues of *Pelargonium hortorum*. *Botanical Gazette* 149 (3): 253-259.

Taylor, H.M., D.R. Upchurch, J.M. Brown and H.H. Rogers. 1989. Some methods of root investigations. Proceedings, International Root Research Conference. Uppsala Sweden, August 21-26, 1988.

Cofer, G.P., J.M. Brown, and G.A. Johnson. 1989. In Vivo magnetic Resonance Microscopy at 5um. *Journal of Magnetic Resonance* 83, 608-616.

Brown, J.M., P.J. Kramer, G.A. Johnson and G.P. Cofer. 1990. Use of MRI microscopy for noninvasive observations of root-soil water relations. *Theoretical and Applied Climatology*. 42:229-236.

Cassel, D.K., J.M. Brown, and G.A. Johnson. 1990. Computer Tomographic Analysis of Water Distribution and Flow in Porous Media. *Theor. Appl. Climatol.* 42, 223-228.

Schreiber, A.A., Brown, J.M., C.O. Knowles and M.L. Fairchild. 1990. Insecticide resistance in Western Flower Thrips in Missouri. *Pest Resistance Management*. 2:44-45.

Jeong, G.S., J.M. Brown and B.R. Jeong. 1990. Influence of *Trichoderma* on the growth of bedding plants. *Hort. Sci* 25(9):339.

SYMPOSIA PRESENTATION AND PUBLICATIONS

Brown, J.M. and R.P. Guyette. 1998. Using Dendrochronology for Evaluating Phytotoxic Events in Pecan Orchards. Published abstract and presentation. American Chemical Society, Boston, MA, August 23.

Investigations Where Testimony Was Provided by John Brown in Deposition and Court

2012

Dallzell vs Country View

Testified on swine impact for home owners
Odor issues
Indianapolis, IN
Deposition

Hidalgo vs ERP Operating Limited Partnership

Atlanta, GA
Wrongful death case
Deposition and trial was in 2013

Hall vs Northwest Fertilizer

Deposition and trial was in 2013
St. Joseph, MO
Satellite analysis of field conditions related to moisture and crop damage
Improper application of contaminated herbicide

2011

Piper vs Maurice Carmack and Tyson Foods Inc.

Testified on swine impact in community
Speer Law Firm
Odor issue
I think Clinton, Missouri
Testified for Plaintiff

Vernon Hanes vs Smithfield Foods, Inc., et al.

Testified on swine impact in community
Speer Law Firm
Odor issue
I think North West Missouri
Testified for Plaintiff

U.S. Humane Society vs Olivera Egg Ranch

Testified on Poultry impact in community
Speer Law Firm
Odor issue
I think Sacramento, CA.
Testified for Plaintiff

Beets et.al. vs Blue Tee Corp et. al.

Testified on mine waste impact in community
Speer Law Firm
Particle dispersal issue
Kansas City, Missouri
Testified for Plaintiffs

Betty Jean Cole, et.al. vs Asarco Inc, et al.; The Doe Run Resources Corp.

Testified on mine waste impact in community
Speer Law Firm
Particle dispersal issue
Kansas City, Missouri
Testified for Plaintiffs

2010

Robert L. Ancel, Individually, et al. vs Bayer Ag, Bayer Cropscience

Testified on impact of LL601 genes in long grain rice production
Phipps Law Firm
Gene dispersal issue
Arkansas
Testified for Plaintiffs

B. GAIL BURNS, et al. vs UNIVERSAL CROP PROTECTION ALLIANCE, LLC, et al.

Testified on impact of LL601 genes in long grain rice production
Phipps Law Firm
Gene dispersal issue
Arkansas
Testified for Plaintiffs

John Owens et.al. vs CONTIGROUP COMPANIES, INC., et al

Testified on swine impact in community
Speer Law Firm
Odor issue
Kansas City, Missouri
Testified for Plaintiff

Vernon Hanes vs Smithfield Foods, Inc., et al.

Testified on swine impact in community

Speer Law Firm
Odor issue
Kansas City
Testified for Plaintiff

McQuire vs Smithfield Foods, Inc. et al.

Testified on swine impact in community
Speer Law Firm
Odor issue
Kansas City
Testified for Plaintiff

Doug Scherler et. al., vs Bayer Cropscience, LP.

Testified on herbicide impact in wheat
Schuler Law Firm
Chemical injury issue
Oklahoma City
Testified for Plaintiff

Quapaw Tribe of Oklahoma, et al. v Blue Tee Corp., et al.

Testified on mine waste impact in community
Speer Law Firm
Particle dispersal issue
Kansas City, Missouri
Testified for Plaintiffs

Lenny Joe Kyle vs Bayer CropScience LP

Testified on impact of LL601 genes in long grain rice production
Phipps Law Firm
Gene dispersal issue
Arkansas
Testified for Plaintiffs

2009

Robert L. Ancel, Individually, et al. vs Bayer Ag, Bayer Cropscience

Testified on impact of LL601 genes in long grain rice production
Phipps Law Firm
Gene dispersal issue
Arkansas

Testified for Plaintiffs

NEIL CRAVEN vs CONTIGROUP COMPANIES, INC., et al

Testified on swine impact in community
Speer Law Firm
Odor issue
Kansas City
Testified for Plaintiff

John Owens et.al. vs CONTIGROUP COMPANIES, INC., et al

Testified on swine impact in community
Speer Law Firm
Odor issue
Kansas City
Testified for Plaintiff

R&G Produce Company vs Edward May and Del Sol Farms and Williams Farms.

Testified on grape tomato losses
I don't remember
Economic loss issue
Columbia, MO
Testified for Plaintiff

2008

None

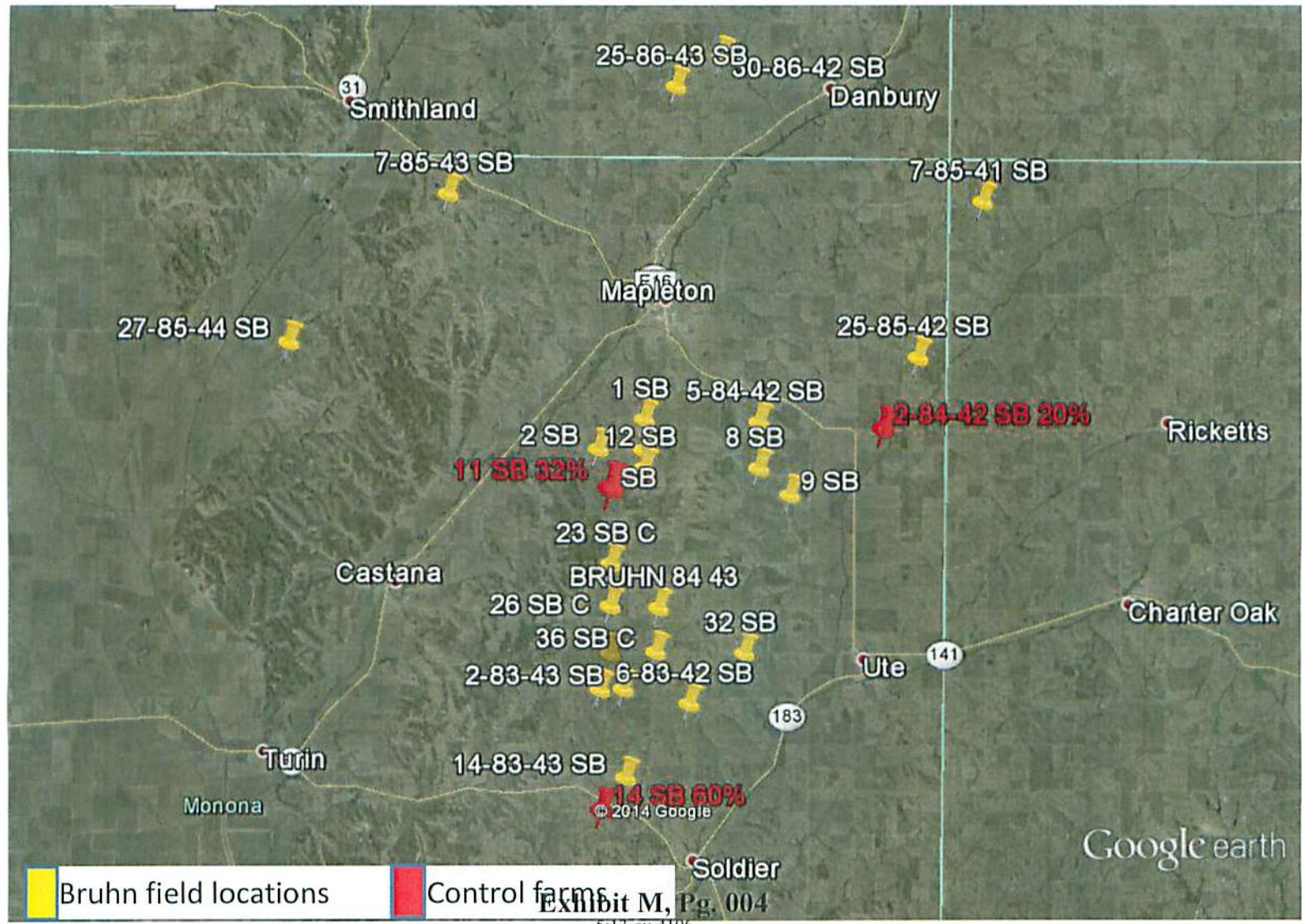
2007

Steven & Kathy Adwell v Contigroup Companies, Inc July 2007 & Dec 3, 2007

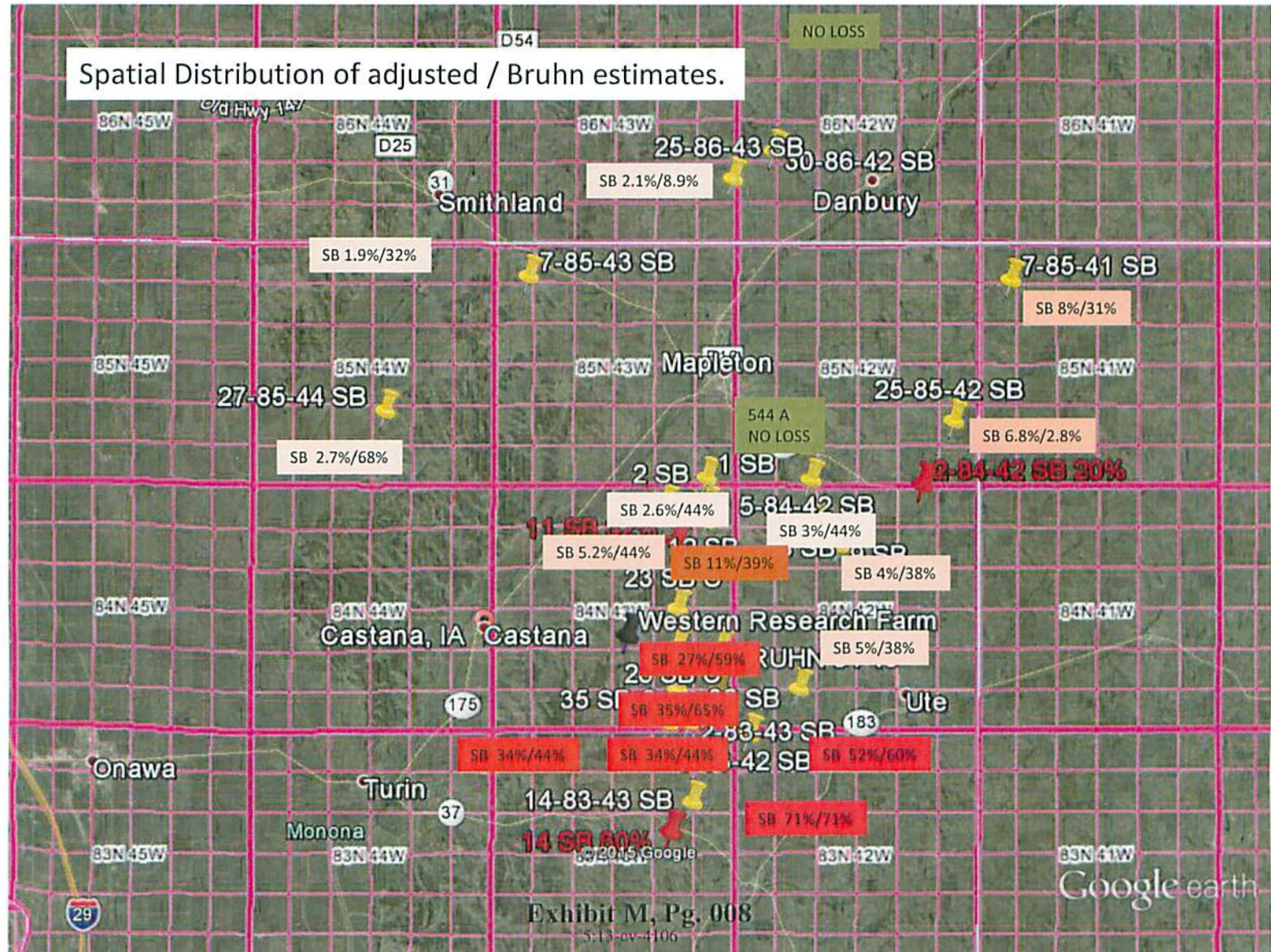
Testified on swine impact in community
Speer Law Firm
Odor issue
Kansas City
Testified for Plaintiff

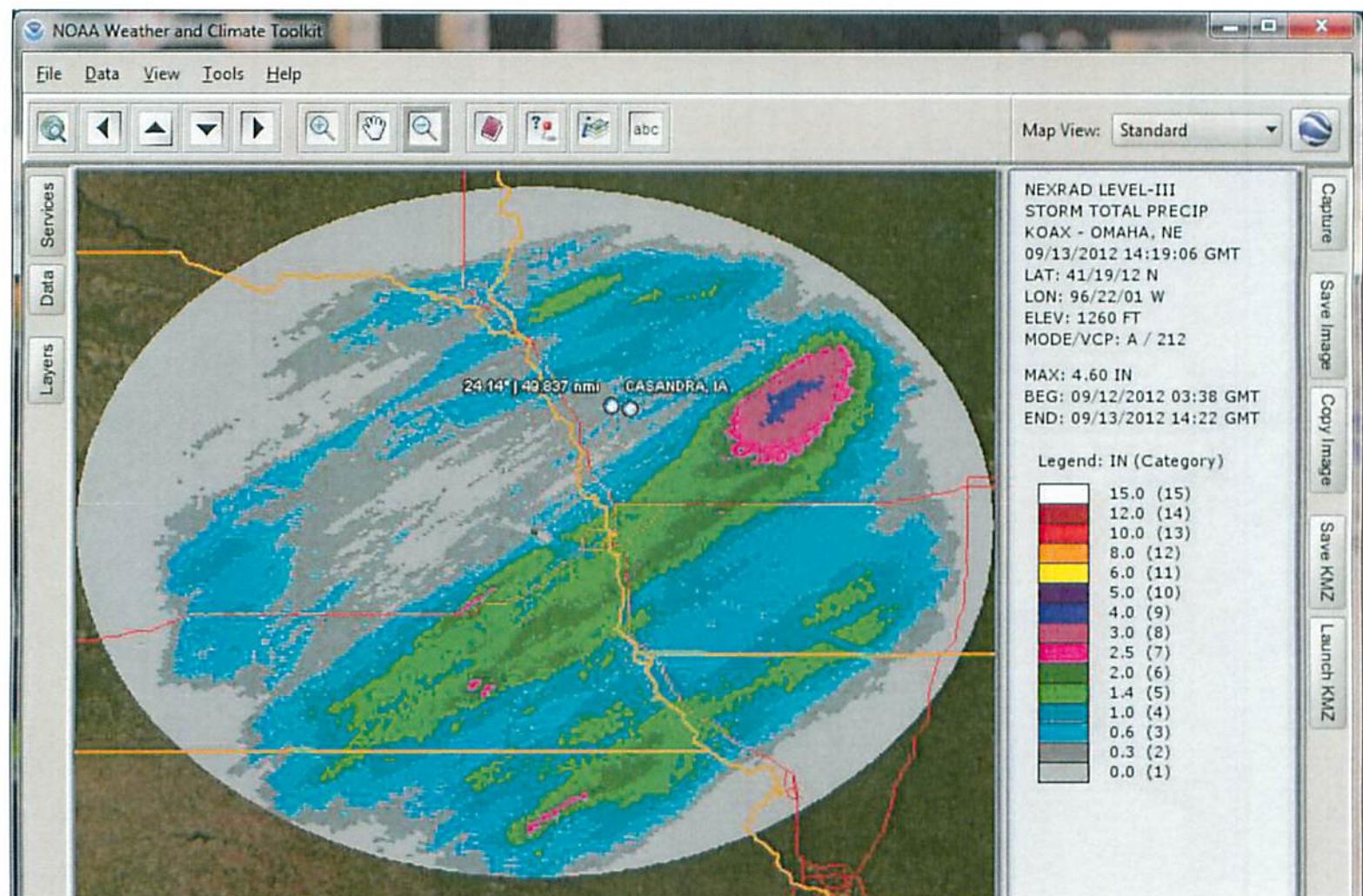
Quapaw Tribe of Oklahoma, et al. vs ASARCO et.al. October 3, 2007

Testified on impact of lead on the environment
Bates Law Firm
Mine Waste dispersal issue
Houston, TX
Testified for Plaintiffs

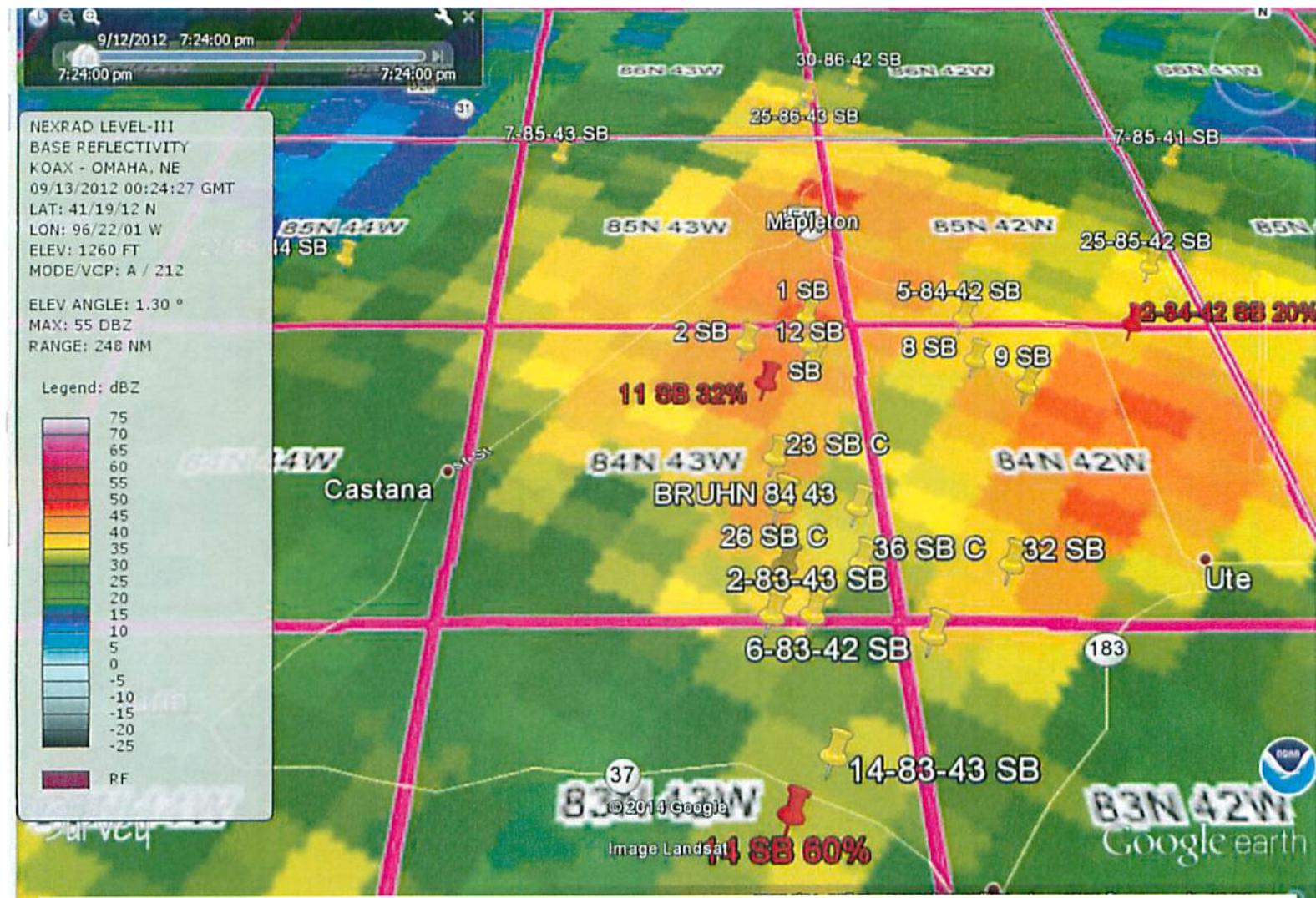


Spatial Distribution of adjusted / Bruhn estimates.





This is a mosaic illustrating the total precipitation for the September 12 storm event. Note that the image date is 9/13/12. The time of this image is Greenwich Mean Time (GMT) or about 5 hours ahead of CST. Thus, this image is 11:19 PM CST.



Yellow pins represent Bruhn Farm fields and Red pins represent three control farms with hail injury. SB= Soybeans C= Corn. Note the variability in storm intensity across the landscape. **Exhibit M, Pg. 020**

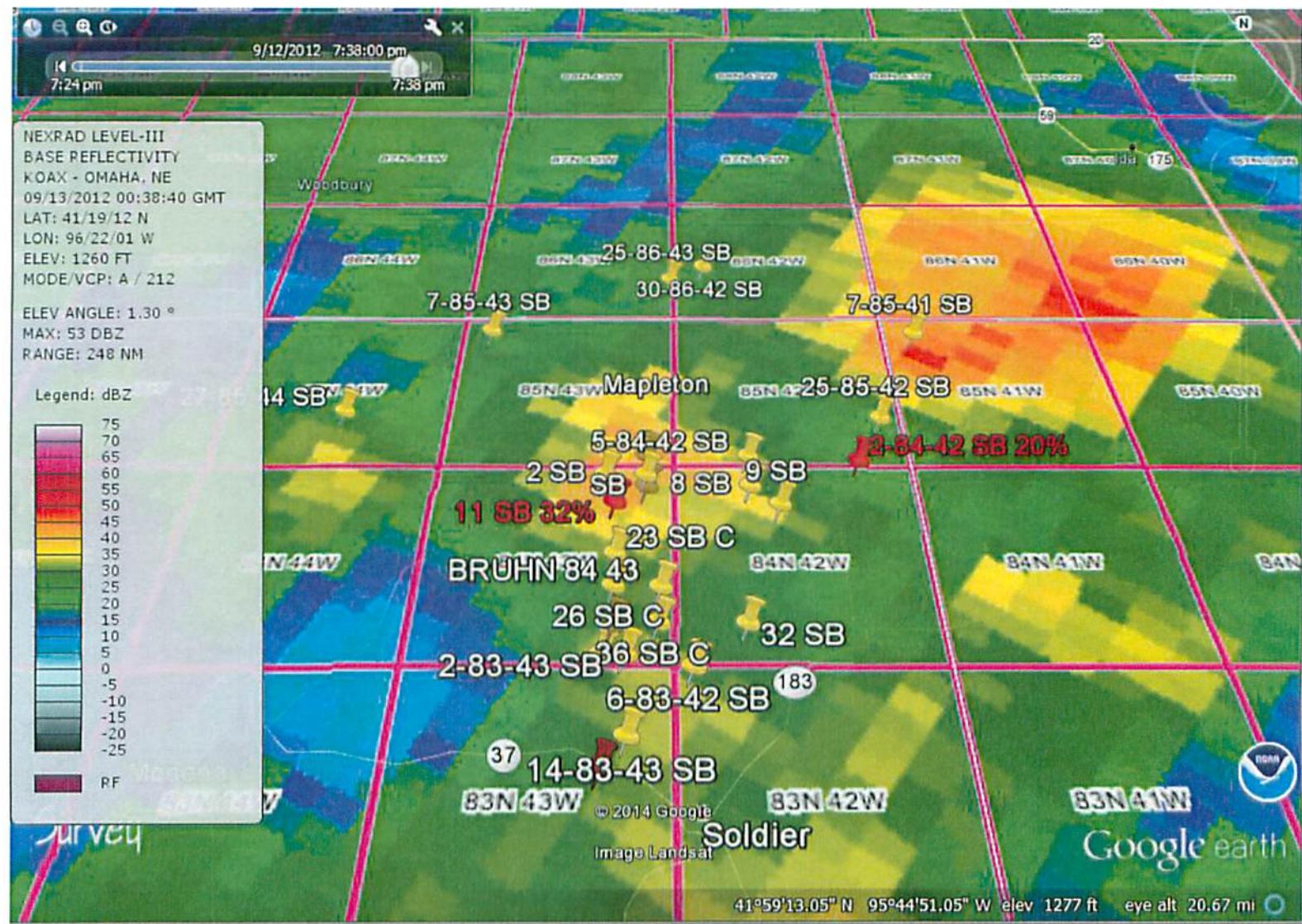
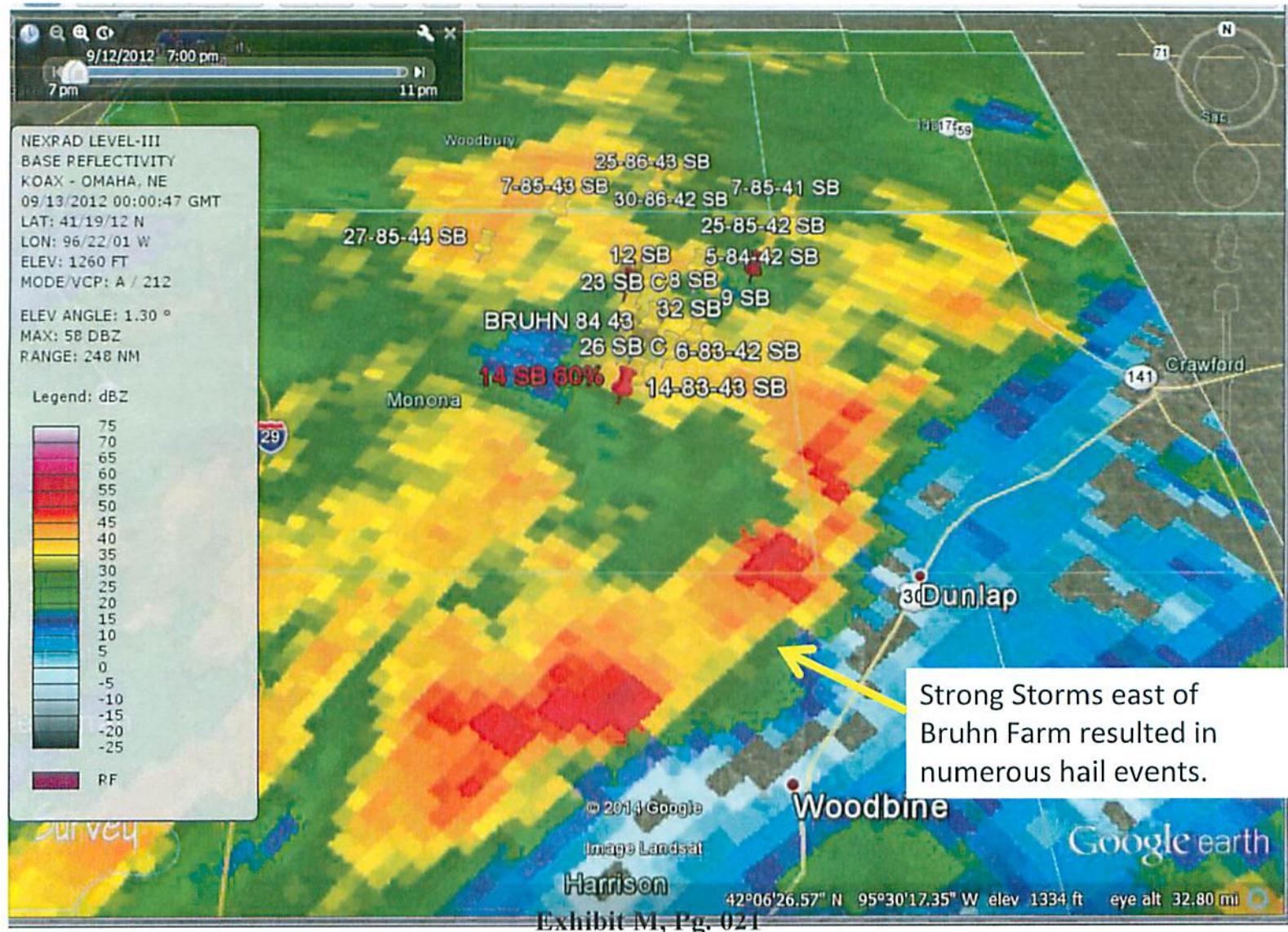
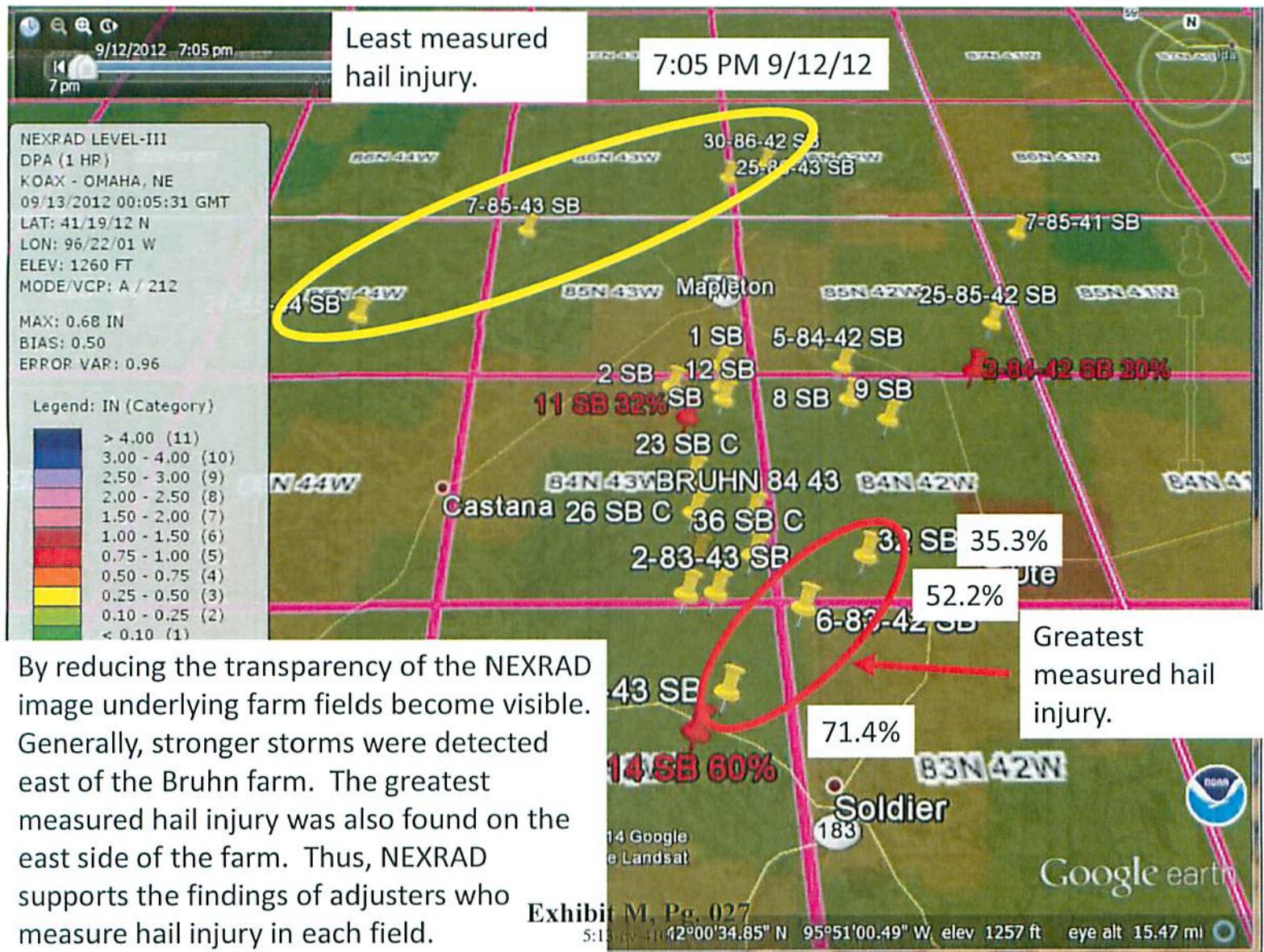
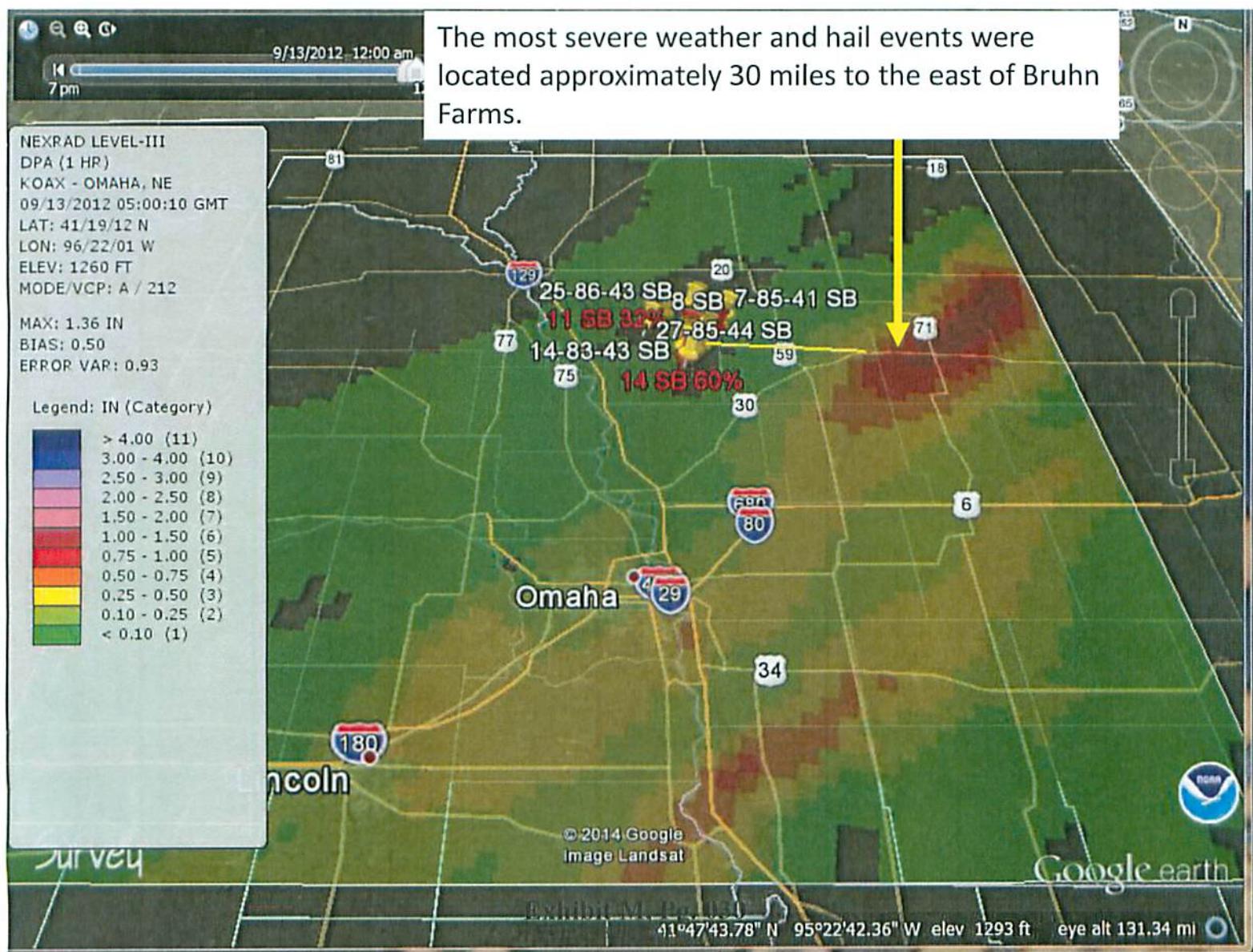


Exhibit M, Pg. 022

5:13-cv-4106







John J. Mewes, Ph.D.

Education

Aug. 2001 Ph.D., Meteorology
University of Oklahoma, Norman, OK

Dissertation: “On Use of the Anelastic Vertical Vorticity Equation in Dual-Doppler Analyses of the Vertical Velocity Field”

May 1997 M.S., Meteorology
University of Oklahoma, Norman, OK

May 1994 B.S., Atmospheric Sciences
University of North Dakota, Grand Forks, ND

Work Experience

Jan. 2011 – present *Chief Scientist*
Iteris, Inc.

Management of R&D activities relating to various scientific and software development projects, including the 15-state Maintenance Decision Support System (MDSS) Transportation Pooled Fund Study, FHWA’s Weather Responsive Traffic Management Initiative, and various applications related to simulation of weather, crop, and land surface interactions for the agricultural industry. Also manage software development, operations and maintenance associated with Iteris’ weather analysis and forecasting systems, and related APIs.

Jan. 2002 – Sep. 2011 *Assistant Professor (P/T)*
University of North Dakota, Dept. of Atmospheric Sciences

Development of mesoscale model initialization techniques for application in a battlefield environment, with special focus on techniques for initializing the soil, vegetation, and atmospheric surface layer properties in the model to improve prediction of the dispersion of chemical and biological agents. Also collaborated on development of sense-and-avoid capabilities for unmanned aerial vehicles using new weather radar technologies.

May 1999 – Jan. 2011 *Chief Scientist*
Meridian Environmental Technology, Inc.

Development of an operational weather forecasting and dissemination system as well as a pavement condition forecast model. Development of digital aerial imaging technologies for the USDA Farm Service Agency. Research into remote assessment of field-level weather conditions, and applications of this weather information for site-specific crop disease prediction using techniques of artificial intelligence. Mesoscale model development and application. Design and development of a winter maintenance decision support system,

John J. Mewes, Ph.D.

presently being utilized by over 15 State Departments of Transportation.

Oct 1997 – Aug 2001

Graduate Research Assistant

Coastal Meteorology Research Project, University of Oklahoma

Conducted research into applications of the anelastic vertical vorticity equation in improving dual-Doppler analyses of the vertical velocity field through application variational calculus techniques.

Aug 1995 – Sep 1997

Graduate Research Assistant

Center for Analysis and Prediction of Storms, University of Oklahoma

Developed forecast verification techniques for application with non hydrostatic mesoscale models. Enhanced the land surface physics package of the ARPS mesoscale model.

Aug 1994 – Aug 1995

Graduate Research Assistant

Cooperative Institute for Mesoscale Meteorological Studies
University of Oklahoma

Worked to verify BATS model forecasts of soil moisture with measurements from the Oklahoma Mesonet.

Honors and Appointments

Douglas K. Lilly Award for Best Ph.D. Manuscript, University of Oklahoma School of Meteorology, 2001.

Senator, University of Oklahoma Graduate Student Senate, 1996-1997.

American Meteorological Society / Martin Marietta Astro Space Graduate Fellowship, 1994-1995.

President, University of North Dakota Student Chapter of the AMS, 1993-1994.

American Meteorological Society / Campbell Scientific Undergraduate Scholarship, 1992-1994.

Outstanding Freshman (90-91) / Sophomore (91-92) / Junior (92-93) / Graduating Senior (93-94)
Student, Department of Atmospheric Sciences, University of North Dakota.

Outstanding Student Researcher, Department of Atmospheric Sciences, University of North Dakota, 1993-1994.

Presidential Freshman Scholar, University of North Dakota, 1990-1992.

Century Three Leaders Scholarship, 1990-1991.

John J. Mewes, Ph.D.

Publications

Mewes, J., R. Hart, L. Osborne, and B. Hershey, 2008: Maintenance Decision Support Systems: Research Progress and Continuing Needs. *Preprints, 24th IIPS Conference*, Amer. Met. Soc., New Orleans, LA. January, 2008.

Kuntz, J., L. Osborne, and J. Mewes, 2008: Use of a Maintenance Decision Support System to Define Winter Severity Indices. *Preprints, 24th IIPS Conference*, Amer. Met. Soc., New Orleans, LA. January, 2008.

Mewes, J., R. Hart, L. Osborne, and B. Podoll, 2005: The Pooled Fund Study Maintenance Decision Support System: A Functional Overview. *Preprints, 21st IIPS Conference*, Amer. Met. Soc., San Diego, CA. January, 2005.

Mewes, J., 2005: Matching User Needs to Provider Capabilities. *Preprints, 3rd Users Conference*, Amer. Met. Soc., San Diego, CA. January, 2005.

Hart, R., L. Osborne, J. Mewes, and D. Huft, 2004: The Design and Development of a Maintenance Decision Support System. *Preprints, 20th IIPS Conference*, Amer. Met. Soc., Seattle, WA. January, 2004.

Mewes, J., R. Hart, and D. Burkheimer, 2004: Evaluation of the Accuracy of Road and Bridge Forecasts Provided to the Iowa DOT. *Preprints, 20th IIPS Conference*, Amer. Met. Soc., Seattle, WA. January, 2004.

Mewes, J. and R. Hart, 2004: A Dynamic – Stochastic Approach to Road and Bridge Frost Forecasting. *Preprints, 20th IIPS Conference*, Amer. Met. Soc., Seattle, WA. January, 2004.

Block, C., J. Mewes, and S. Gaddy, 2003: Support Surface Transportation Weather Forecasting at Meridian Environmental Technology, Inc. *Preprints, 19th IIPS Conference*, Amer. Met. Soc., Long Beach, CA. February, 2003.

Mewes, J. and A. Shapiro, 2002: On Use of the Anelastic Vertical Vorticity Equation in Dual-Doppler Analyses of the Vertical Velocity Field. *J. Atmos. Ocean. Tech.*, **19**, 543–567.

Mewes, J. and A. Shapiro, 1999: Dual-Doppler Analysis Using the Anelastic Vertical Vorticity Equation. *Preprints, 29th International Conference on Radar Meteorology*, Amer. Met. Soc., Montreal, Quebec, Canada. July, 1999.

Shapiro, A. and J. Mewes, 1999: New Formulations of Dual-Doppler Analysis. *J. Atmos. Ocean. Tech.*, **16**, 782-792.

Carr, F. H., J. Mewes, K. Brewster and K. K. Droege, 1996: Quantitative Verification of Non-Hydrostatic Model Forecasts of Convective Phenomena. *Preprints, 18th Conference on Severe Local Storms*, Amer. Met. Soc., San Francisco, CA. February, 1996.